



Forest Health Protection Pacific Southwest Region



Date: August 28, 2019

File Code: 3400

To: Patricia Grantham, Klamath National Forest

Subject: South Fork Salmon River Project

At the request of Marissa Jones, a site visit was made to the South Fork Project (Trail Creek Project) from Carter Meadows to Shadow Creek, Klamath National Forest, on April 29, 2019. The objectives were to assess the current insect and disease conditions. There were two distinct parts to the trip

Background

The general project area is along the Cecilville Road, Highway 93 between Callahan and Cecilville (Figure 1). The first location we looked at was between Trail Creek Campground and Carter Meadow Summit where hazard tree removals and thinning are



Figure 1. Google earth view of the area visited between Carter Meadows and Shadow creek Campground (imagery date May 2016).

**NORTHERN CALIFORNIA SHARED SERVICE AREA
3644 AVTECH PARKWAY, REDDING, CA 96002
(530) 226-2437**

Cynthia Snyder
clsnyder@fs.fed.us

being considered as part of a Forest Health Initiative Project in the Late Successional Reserve (LSR). The next location we looked at was near shadow Creek Campground where large pockets of Douglas-fir were dead and dying along the South Fork of the Salmon River.

Observations

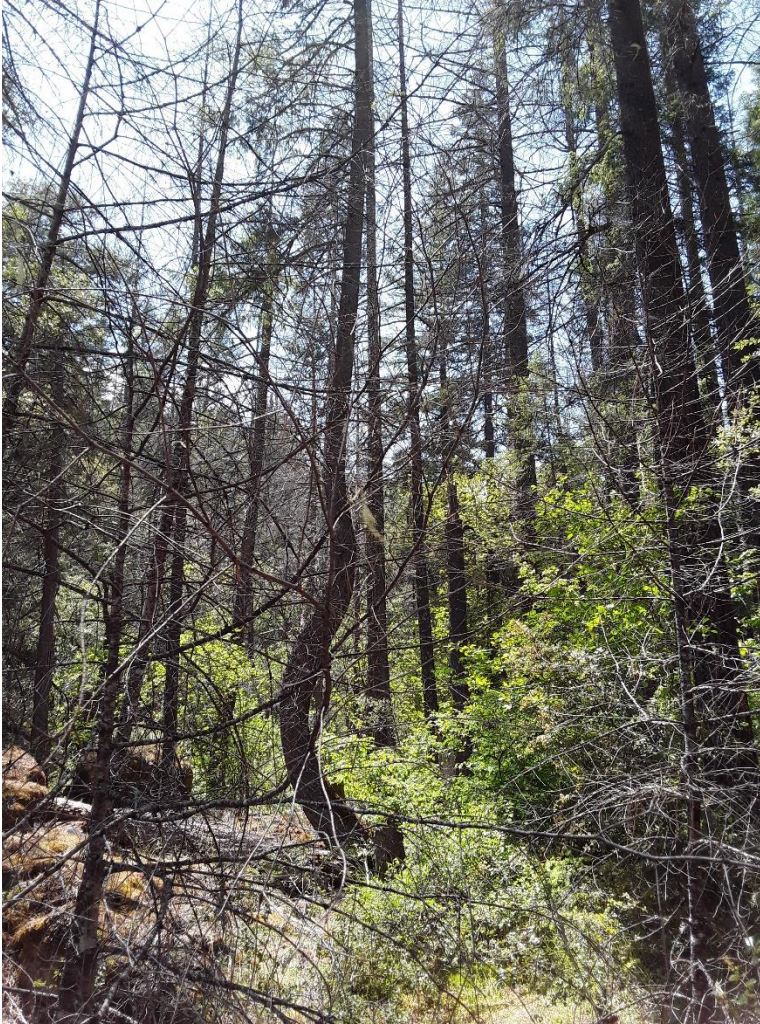
Between Carter Meadow summit and Trail Creek Campground along Forest Road 39N08, I observed dense mixed conifer forest with a high proportion of Douglas-fir (*Pseudotsuga menziesii*) mixed with white fir (*Abies concolor*), incense cedar (*Calocedrus decurrens*), and ponderosa pine (*Pinus ponderosa*). There was scattered pockets of dwarf mistletoe in the Douglas-fir (Figure 2). Variability in the intensity and distribution of dwarf mistletoe is high. In some areas, tree dwarf mistletoe ratings (DMRs, which indicate a range in the level of dwarf mistletoe infection from 0 to 6) are predominantly 4-6, in others they are 1-2, while some areas are free of the pathogen (DMR = 0). I also observed areas with white fir mortality due to fir engraver beetle. Although Heterobasidion root disease is known to occur on Carter Meadow Summit, I



Figure 2. Douglas-fir with dwarf mistletoe, DMR 4.

did not find evidence of conks in the dead white fir on the site we visited.

The next site we visited was to determine the cause of mortality in Douglas-fir along the south fork of the Salmon River (Figure 3). Large pockets of Douglas-fir had extensive mortality. Much of the mortality was older than 3 years judging by the lack of needles and fine branches. Others were more recently killed. The sites were located on both sides of the highway, both high on the upper slope and down along the edge of the river. Beneath the bark I found evidence of flat headed borers and hardened phloem on the older dead. I returned July 8, 2019 with Chris Lee, Cal-Fire Pathologist, to investigate further and look for evidence of root disease. No



evidence of root disease was found.

Discussion

For the first site we visited in the LSR, I am eager to see if a project emerges. I would definitely support removing hazard trees along the road between the campgrounds (Carter Meadows and Trail Creek), that should be covered by a road maintenance CE if a larger project does not develop.

Dwarf mistletoe can be beneficial for wildlife in an LSR, but the level at which it is now puts the health of the trees at risk. Variability on the Dwarf mistletoe may work in the favor of the Forest in this case. I would recommend sanitation thinning, removing highly infested trees from both the understory and the

overstory. At best, the treatment would leave only non-host (incense cedar, white fir, ponderosa and sugar pine) and uninfested or lightly-infested (DMR = 1 or 2) host (Douglas-fir) trees. Infested overstory trees, which have the ability to rain dwarf mistletoe seeds onto the understory trees and regeneration, should have high priority for removal.

Group selections can be particularly effective if placed where dwarf mistletoe infection levels are highest. Again, any trees are left in the groups should be non-host species or uninfested or lightly-infested hosts (DMR 0, 1 or 2). To the greatest extent possible, borders of the groups should be free of dwarf mistletoe, consisting of non-host trees. Positioning the groups alongside natural clearings or breaks, or by installing host-free buffer strips that separate infested and uninfested areas can also help prevent the reinvasion of dwarf mistletoe into the groups. If buffer strips are installed, they should be at least 25-30-feet wide. Finally, in order to reduce the raining down of dwarf mistletoe seed from infected overstory trees to vulnerable host trees below, it is best if the treatment strives to move the current stand structure from two stories to a single story.

Overall, the objective of the treatment will be to increase tree vigor and significantly reduce the incidence and impacts of dwarf mistletoe. Thinning would also provide more

available resources (space, water, nutrients) to the residual trees for improved growth and defense against other insect and disease threats.

The Douglas-fir mortality observed along the river towards Shadow Creek was determined to be drought-related, most of the mortality was 3 or more years old putting it during or at the end of the last drought. Douglas-fir has been in decline since the beginning of the last extended drought here in California (2010-2015). Many of the trees that became drought stressed succumbed to either the drought or to flatheaded fir borers (*Phaenops drummondi*) which was able to respond to the drought by attacking healthy trees that get drought-stressed. These wood borers usually have a one-year life cycle, but also have the ability to go into a “resting” phase for a number of years before completing their life cycle and killing the host. This resting phase allows the wood borer to attack a healthy tree and wait for the tree to become stressed enough to overcome. Removing trees known to be infested before they die would reduce the population level and provide more resources to the residual live trees. Converting to a heavier mix of non-host (incense cedar and pine) would provide diversity to buffer losses such as this when they occur.

If you have any questions regarding this report and/or need additional information, please contact Cynthia Snyder at 530-226-2437.

/s/ Cynthia Snyder

CC: Marissa Jones, Andrew Mueller, Nathan Briscoe, Robert Muma, Dan Beall, Malia Ortiz, Mike Bennett, Chris Losi, Sheri Smith, Phil Cannon, Chris Fischer